

Claims

What is claimed is:

1. A power supply for an apparatus for metering at least one type of electrical power over a predetermined range of service voltages supplied by electrical service providers, said apparatus comprising a voltage input circuit connected to receive a voltage component and a processing unit, said power supply comprising:
  - a surge protection circuit, connected to said voltage input circuit, which receives an input voltage;
  - a rectifier circuit, connected to said surge protection circuit, which receives an alternating current voltage from said surge protection circuit and outputs a rectified direct current voltage;
  - a transformer comprising first, second and third windings, which receives said rectified direct current voltage at said first winding so that current flows through said first winding, wherein said second winding defines an unregulated output voltage of said power supply, and wherein said third winding is substantially similar to said second winding so that the voltage across said third winding is similar to the voltage across said second winding;
  - a switching device, connected to said first winding, for permitting and preventing the flow of current through said first winding, wherein said switching device is operable in response to a control signal; and
  - 20 a controller, connected to said switching device, for generating said control signal based on the voltage across said third winding, and wherein said control signal operates to disable said switching member.
2. The apparatus as recited in claim 1, said controller comprising a current-mode regulator, wherein a current reference signal is generated by said current-mode regulator.
3. The apparatus as recited in claim 1, further comprising a linear regulator, wherein said output of said power supply is input to said linear regulator, wherein said linear regulator outputs a regulated voltage.

4. The apparatus as recited in claim 3, wherein said regulated voltage is less than said output voltage, and wherein said regulated voltage is output to a precision voltage reference generator.

5. The apparatus as recited in claim 3, wherein said unregulated voltage is input to said apparatus to determine the presence of a power fail condition.

6. The apparatus as recited in claim 3, further comprising a non-volatile supply, wherein said regulated voltage is input to said non-volatile supply, wherein said apparatus is switched to said non-volatile supply when said regulated voltage is not present.